What is claimed is:

1. A method for a link layer protocol comprising:

5   reserving a single link unit or a packet for each virtual channel (VC);

storing a plurality of buffer indexes of a plurality of link units; and

sharing the remaining link buffers.

2. The method of claim 1 wherein storing the plurality of buffer indexes comprises

10   storing the plurality of buffer indexes in a link buffer or a first in first out memory(FIFO).

3. The method of claim 2 wherein the sharing the remaining link buffers is based at least

in part on whether the buffer is used for receiving or transmitting data.

15   4. The method of claim 1 wherein sharing the remaining link buffers allows for switching

from one list of link units for a first VC is blocked, the link layer by switching from the

first VC's link buffer to the second VC's link buffer.

5.   An apparatus comprising:

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a main transmit buffer and a main receiver buffer for each virtual channel (VC);

a plurality of link buffers to be shared based at least in part on a link buffer or FIFO for

each virtual channel; and

the main receiver and transmit buffers to be sized based at least in part on a round trip

delay.

6. The apparatus of claim 5 wherein the apparatus is a link layer.

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7. The apparatus of claim 5 wherein the apparatus facilitates the switch from a first

VC's link buffer or FIFO to a second VC's link buffer or FIFO if the first VC's link

buffer or FIFO is blocked.

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8. A link layer protocol comprising:

a main transmit buffer and a main receiver buffer for each virtual channel (VC);

a plurality of link buffers to be shared based at least in part on a link buffer or

FIFO for each virtual channel; and

15   a sender of a link unit for a VC to indicate whether the link unit utilized a reserved

credit or a shared VC buffer; the reserved credit be utilized for a predetermined

function if the shared VC buffer is used instead of the reserved credit.

9. The link layer protocol of claim 8 wherein the link layer protocol is utilized as a

20   means of communication to a physical layer.

10. The link layer protocol of claim 8 wherein the link layer protocol facilitates the

switch from a first VC's link buffer or FIFO to a second VC's link buffer or FIFO

25   if the first VC's link buffer or FIFO is blocked.

11. The link layer protocol of claim 8 wherein the predetermined function is for a performance critical use.

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12.   A system comprising:

at least two processors that are coupled into a point to point network;

10   a main transmit buffer and a main receiver buffer for each virtual channel (VC) for a link layer protocol of the point to point network;

a plurality of link buffers to be shared based at least in part on a link buffer or FIFO for each virtual channel; and

a sender of a link unit for a VC to indicate whether the link unit utilized a

15   reserved credit or a shared VC buffer; the reserved credit be utilized for a predetermined function if the shared VC buffer is used instead of the reserved credit.

13. . The system of claim 12 wherein the link layer protocol is utilized as a means of communication to a physical layer.

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14. The system of claim 12 wherein the link layer protocol facilitates the switch from a first VC's link buffer or FIFO to a second VC's link buffer or FIFO if the first VC's link buffer or FIFO is blocked.

15. The system of claim 12 wherein the predetermined function is for a performance

critical use.

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16. A system comprising:

at least two processors that are coupled into a point to point network;

a main transmit buffer and a main receiver buffer for each virtual channel

(VC) for a link layer protocol of the point to point network;

10   a plurality of link buffers to be shared based at least in part on a link buffer or

FIFO for each virtual channel; and

the main receiver and transmit buffers to be sized based at least in part on a

round trip delay.

15   17. The system of claim 16 wherein the link layer protocol facilitates the switch from

a first VC's link buffer or FIFO to a second VC's link buffer or FIFO if the first VC's

link buffer or FIFO is blocked.